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Access to Flight Data Recorder and Cockpit Voice Recorder Tapes

DEPARTMENT OF TRANSPORTATION

14 CFR Parts 121 and 135

[Docket No. 20661; Notice No. 80-14B]

FAA Access to Flight Data Recorder and Cockpit Voice Recorder Tapes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Supplemental Notice of Proposed Rulemaking.

SUMMARY: These proposals, if adopted, would establish the regulatory procedures necessary for the Administrator to obtain flight data recorder information and cockpit voice recorder information. The data are important to the furtherance of aviation safety. The information will be used to study the human factor elements associated with aircraft operation and design to determine what, if any, regulatory changes should be made to enhance aviation safety. The importance of this rulemaking should not be underestimated; the human element is the primary cause of aviation accidents. These proposals would not change the Administrator's policy regarding use of information derived from cockpit voice recorders, but would limit the Administrator's ability to use flight data recorder data in enforcement proceedings. More specifically, cockpit voice recorder data would not be used for enforcement purposes. Flight data recorder data would continue to be used for enforcement purposes but not when such data are removed for the purpose of studies discussed herein.

This supplementary notice discusses a number of comments received in response to Notice of Proposed Rulemaking No. 80-14 (45 FR 57694), and solicits additional comments.

DATE: Comments must be received on or before May 18, 1981.

ADDRESSES: Send comments on the proposals in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (AGC-204), Docket No., 800 Independence Avenue SW., Washington, D.C. 20591; or deliver comments in duplicate to: FAA Rules Docket, Room 916, 800 Independence Avenue SW., Washington, D.C.

Comments may be examined in the Rules Docket weekdays between the hours of 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT: Everett W. Pittman, Regulatory Review Branch (AVS-22), Safety Regulations Staff, Associate Administrator for Aviation Standards, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone (202) 755-8714.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of the proposed rules by submitting such written data, views, or arguments as they may desire. Communications should identify the regulatory docket or notice number and be submitted in duplicate to the address listed above. Commenters wishing the FAA to acknowledge receipt of their comments on this notice must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. 20661." The postcard will be date/time stamped and returned to the commenter. All communications received on or before the closing date for comments will be considered by the Administrator before taking action on the proposed rules. The proposals contained in this notice may be changed in the light of comments received. All comments submitted will be available in the Rules Docket for examination both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerned with this rulemaking will be filed in the docket.

Availability of NPRMs

Any person may obtain a copy of this supplemental notice of proposed rulemaking (NPRM) by submitting a request to the Federal Aviation Administration, Office of Public Affairs, Attention: Public Information Center, APA-430, 800 Independence Avenue SW., Washington, D.C. 20591, or by calling (202) 426-8058. Communications must identify the notice number of this NPRM. Persons interested in being placed on a mailing list for future NPRMs should also request a copy of Advisory Circular No. 11-2 which describes the application procedure.

Background

This supplemental notice of proposed rulemaking is based on Notice of Proposed Rulemaking No. 80-14, published in the **Federal Register** on August 28, 1980 (45 FR 57694). Notice 80-14A was published in the **Federal Register** on October 30, 1980, extending the initial comment period. In response to those notices, 52 comments were received. An analysis of those comments has pointed out several areas where clarification of the proposed rules is needed, and the rules proposed herein have been so modified. More importantly, though, is the misinterpretation of several aspects of the proposals contained in Notice 80-14. Since the FAA is convinced of the importance of industrywide cooperation in the study and analysis of human error, and such cooperation cannot be founded on a basis of misunderstanding, this supplemental notice has been issued. It is hoped that the discussion of intent presented herein, and the modifications to the rules presently proposed, will serve to clarify the original intent of the agency.

Notice 80-14 was issued in response to the FAA's need for more hard statistical data on day-to-day working conditions in the cockpit. Recent aircraft certification experience has revealed that more data exists regarding all factors affecting cockpit functions than the FAA has yet utilized. Data derived from the implementation of these proposals will be used in the FAA's Aviation Human Factors Program which includes a major emphasis on identification and reduction of factors causing crew errors. The FAA's Aviation Human Factors Program is a new initiative designed to improve the man-machine interface element of the aviation system. The program is being developed with the full participation of the world aviation community. A major aspect of the program is a series of open workshops at which the FAA, industry and consumers will meet to dicuss present and future human factors issues, priorities, and optimum courses of action. The inflight data collection set forth in these amendments is one small but essential part of the overall Aviation Human Factors Program. In addition, all other pertinent data sources will be analyzed in the study of the human factors affecting aviation safety.

A number of commenters criticized the proposals set forth in Notice 80-14 because the notice did not set forth a detailed plan for the use of data to be collected. Such criticism is misdirected. The purpose of the proposals in Notice 80-14 was to establish a basis for development of a detailed work plan for this aspect of the agency's human factors program. Development of such a work plan is expected to be time consuming, and involve a large number of representatives from all facets of the international aviation industry. It would have been inappropriate to invest the considerable effort required, on the part of all concerned, in the development of these specific plans if the data required for the analysis—i.e., the cockpit voice and flight data recorder tapes, cannot be made available. Thus, the proposed rule changes were set forth before the detailed plan was developed. In this

connection, it is the specific intent of FAA to involve the international aviation community in the planning of this, and other aspects of the human factors program, through participation in a series of workshops. The first was held in Cambridge, Massachusetts on November 24–25, 1980. The second is being held January 15–16, 1981, during the second FAA/Commuter Airline Synposium at Washington, D.C. The third will be held in March of 1981, on a date to be announced in the Federal Register.

The comment of one major airline union deserves specific discussion at this point. Notice 80–14 is criticized therein for stating that cockpit voice recorder data is expected to reveal more about the Air Traffic Control system and runway/taxi transgressions. The commenter claims that "* * * the FAA already has access to recorded data covering both situations * * *. In the case of runway/taxi transgressions, the FAA already has authority to review flight data recorders and cockpit voice recorders * * *." This comment indicates a serious misunderstanding of existing explicit FAA authority. It is exactly because the FAA does not have explicit access to cockpit voice recorder data for such analysis that Notice 80–14 was proposed. Flight data recorders and air traffic controller tapes do not tell the full story in a runway transgression. To perform a complete analysis of such situations in order to get at the underlying cause, the agency must have access to the cockpit voice recorders, which it does not have at present.

Flight data reorder and cockpit voice recorder data should prove invaluable in a variety of other human factors studies, including assessments of flight crew workload and the impact on workload of FAA-mandated systems. An inflight data base will, for example, provide essential information for the human engineering of new cockpit layouts and cockpit designs. Such data may also be used to address any continuing issues regarding the safety of two-member versus three-member crews. Study of the human factors issues in the cockpit environment through use of cockpit voice recorder and flight data recorder data may also shed light on pilot training effectiveness. These data might be used in evaluating or determining the workload impact and coordination effectiveness between pilot and air traffic controller. Furthermore, with the availability of this data, studies related to aircraft performance and pilot response may be implemented and furthered.

The need to study human factors in the cockpit environment is supported by findings of the National Transportation Safety Board (NTSB) that errors of judgment or management play a major role in airline accidents. Historically, pilot error is a factor in approximately 60 percent of air carrier and 88 percent of general aviation fatal accidents. Although the majority of fatal aviation accidents involve some element of crew error, categorization of accidents as to the nature of the crew error and the identification of underlying human problems has never been accomplished. Utilization of flight data recorder tapes and cockpit voice recorder tapes will enable the FAA to study and analyze the complex interactions in the man-machine environment.

A number of commenters implicitly or explicitly indicate that FAA enroute inspection should be able to provide first-hand data on cockpit workload. The FAA disagrees, principally for two reasons. First, pilots' unions themselves consistently claim that the "real-world" environment is different from that which the FAA believes to be representative. The Air Line Pilots Association (ALPA), in its comment, states that "The most significant data that would be obtainable would reveal how airplanes are flown under operational conditions. In this respect, the data would show how unrealistic many of the certification tests required by FAA really are." The FAA interprets this statement as one of the clearest possible reasons for having access to, and carefully analyzing, flight data and cockpit voice recorder data. Secondly, the FAA has reviewed its data on air carrier enroute inspections since the early 1960's. Nearly half a million inspections have been performed in revenue service, during a time when the number of air carrier flights approached 100 million. An analysis of these data indicates strongly that the operation of air carrier aircraft is conducted in a different manner when an FAA inspector is on-board, compared to when he or she is not. The proof of this claim lies in an examination of the accident rates experienced for the two types (inspector/no inspector) of revenue flights. The only practical way to determine what these differences are is to analyze flight data and cockpit voice recorder tapes. Taken together, these are two powerful arguments in favor of this proposed development in the Aviation Human Factors Program.

There were two major questions raised concerning this program—what is its scope and what is its cost? On November 24 and 25, 1980, the FAA held the opening workshop of its series on Aviation Human Factors. Determinations regarding the use and quantity of information derived from implementation of these proposals, as well as procedural matters involving data collection, processing, and analysis, will be made as the information from these workshops is further developed. Development of the program will, therefore, take place with the full participation and input of all segments of government and private industry. As a result, the number of cockpit voice recorder and flight data recorder tapes analyzed will vary with time. The cost will also vary. However, as the FAA stated in NPRM 80–14A, the FAA fully intends to reimburse the carriers for the direct costs associated with removal and replacement of the units. Thus, the direct cost impact on the public will be minimal, if any. To set the procedures for reimbursement, and to set forth the ministerial details as to actual collection of the data, the FAA will establish an agency order and an advisory circular. Both of these documents will be available to the public. This procedure will assist the agency in coordinating this data collection effort with the Aviation Human Factors Program. In summation, the FAA has fulfilled its obligation to assess the cost impact on the public, and has determined to bear this cost impact itself with funds approved by the Congress.

A final point worthy of discussion is the concern raised about invasion of privacy and self-incrimination. These are discussed more fully below. In summary, however, the FAA intends to ensure, to the fullest extent permitted by law, that personal data is not released to the public as a result of this program. Further, the FAA does not intend to use the flight data recorder and cockpit voice recorder tapes employed in this human factors effort in any civil penalty or certificate action involving any crewmember. Specific guarantees are provided to these ends in the amended rules proposed herein.

Discussion of Comments

The FAA received 52 comments in response to Notice 80–14. These comments represent the views of individuals, flight crewmembers, citizens committees, airline companies, airplane manufacturers, and other government agencies. One commenter states that the NPRM has the potential of becoming one of the most beneficial aids to future aircraft safety improvement in recent regulatory history and volunteers to assist in development of procedures. A citizens committee, in support of the Notice,

concurs with the FAA that the data obtained will be extremely valuable in enhancing the safety of aircraft operations, and an avionics organization, in its comment, wishes to go on record in full support of the proposals. Virtually all of the remaining 49 comments, the majority of which were received from individual flight crewmembers, oppose the proposals.

In general, the objections to the proposals show a remarkable lack of concern for advancing the cause of aviation safety. Commenters mainly object because they allege that the cockpit voice recorders were not installed for the purpose proposed here, and they allege an invasion of privacy. While these objections are dealt with in more detail below, it is important to focus on a central fact—all air carriers, commuters, air taxis and pilots are authorized to operate pursuant to a statute that demands strict adherence to aviation safety. The American public has entrusted this charge to the FAA and to those who operate by virtue of the FAAct. When it is possible to advance aviation safety, protests that the cockpit voice recorder was not intended for the purpose proposed herein have a hollow ring. The science of human factors has advanced, as has the FAA's ability to use this data to make aviation safer. Use of this tool in this scientific endeavor to advance aviation safety is consistent with the state-of-art in the study of human factors.

Turning more specifically to the individual objections, several commenters state that cockpit voice recorders and flight data recorders were intended to be used only as aids in accident investigations, and not as "tools of discipline" with information gathered from them used to aid in enforcement of Federal Aviation Regulations. The Federal Aviation Regulation requiring the installation of cockpit voice recorders contains no provision limiting the use of cockpit voice recorders to accident investigations. That rule only prohibits the use of cockpit voice recorder data in civil penalty or certiticate actions. Flight recorder data, however, are no different form any other record or report required by the regulations, and may be reviewed and used in investigations and enforcement actions pursuant to § 13.7 of the FARs. These proposals will not in any way change the Administrator's policy regarding use of information derived from cockpit voice recorders in enforcement proceedings. However, in order to promote maximum cooperation in this aspect of its human factors effort, and in response to a number of comments received in response to Notice 80–14, the FAA has amended the proposed rules to include an immunity provision. As now phrased, the proposed rules provide that when, for the purposes of human factors research (and only in such cases), both the cockpit voice recorder and flight data recorder are ordered to be removed from an aircraft by the Administrator for human factors analysis, none of the data contained on the flight data recorder may be used by the Administrator in civil penalty or certificate actions. This does not dilute the agency's authority to continue to use flight data recorder records for enforcement purposes outside the human factors program. It does, however, guarantee that records removed for the purpose of human factors research will be used only for that purpose, and not for purposes of enforcement.

The NTSB, in its comment, states that in the case of *Administrator* v. *Rapattoni and Swanson* the FAA is on record that cockpit voice recorder tapes should only be used in connection with accident investigations. The NTSB is incorrect in its assessment of that brief. Any comments made therein must be considerd in light of the issue presented in the brief; that is, the use of cockpit voice recorder tapes in connection with enforcement proceedings. The FAA merely expressed disagreement with use by the NTSB examiner in that case of cockpit voice recorder information in an enforcement action, stating, "It is clear that the FAA, by the language of the disclaimer contained in the rule and by the language used in adopting the rule, did not envision that the recorded information could or would be used by anyone else in an enforcement action." By such statements the FAA did not establish precedent limiting the use of cockpit voice recorder data to accident investigations.

Several commenters object that to allow the FAA unlimited access to cockpit voice recorder data would result in an invasion of a pilot's privacy. One commenter is concerned that only those with a legitimate need to know should ever be aware of the identity of crewmembers who are involved in a particular occurrence. This concern is not justified. Although the FAA will have access to cockpit voice recorder tapes, the identity of those pilots whose voices are recorded will not be available from the tapes. It, therefore, would be unlikely for any invasion of privacy to result from use of the tapes. Furthermore, under our system of law a person's right of privacy must be weighted against the public interest in order to determine whether a valid invasion of privacy claim arises. If the public interest in the material is substantial, and the intrusion upon one's privacy is of a lesser degree, then the public's interest will prevail and no actionable violation of the affected person's right of privacy will result. The public's interest in promoting safety supersedes any slightly possible intrusion into a flight crewmember's privacy.

Two commenters raise questions concerning possible disclosure of the cockpit voice recorder tapes pursuant to the Freedom of Information Act (FOIA) (5 U.S.C. 552). The NTSB suggested that public availability of the tapes could "adversely affect verbal communication procedures and thus reduce the usefulness of the cockpit voice recorder in the investigation of accidents." Another commenter expresses fear that under the FOIA the tapes would be available to the news media with no assurance that the FAA could, or would, protect the anonymity of crewmembers; it is this aspect, says the commenter that "makes the program completely unacceptable to the airlines." The commenter further states that "this aspect of the program is also unacceptable to the crewmember associations."

These concerns are valid. In response, the FAA plans to extract all significant data from the tapes and then erase them as soon as they are accurately transcribed. If partial disclosure is compelled under the FOIA, at least three factors combine to assure that crew anonymity can and will be preserved. First, the crew will not be identifiable through the tape or transcript thereof; although the tapes invariably contain call signs that identify the airline and flight number, they do not contain a date which would be necessary to identify the crew. Second, the agency, in transcribing tapes reviewed under this rule, will not make a verbatim transcript of all statements made by individuals in the cockpit. If extraneous comments are made, a notation will appear on the transcript noting "extraneous comments." The exact words used will not appear. This is similar to notations that appear on accident transcripts. Third, should anonymity nevertheless not be assurable, the FAA will, to the extent necessary to protect the privacy of individual crewmembers, delete personal discussions from any released tape or transcript, under the authority of Exemption 6 of the FOIA (5 U.S.C. 552(b)(6)). That exemption authorizes withholding of information concerning

personal matters unless there is a public interest to be served by disclosure that would outweigh the invasion of privacy that could result from disclosures. It is the FAA's view that a public interest claim would have to be overwhelming to meet that standard since the protectability of the privacy interest is so obviously essential to the accomplishment of FAA's public purpose, i.e., it seems apparent the program cannot succeed if crewmembers must be concerned about disclosure of personal matters outside the FAA. The FAA, for this reason, hereby announces its intention to defend to the fullest extent permitted by law against disclosures from either tapes or transcripts that can be traced to identifiable individuals. In this connection, if it is possible to identify the crew whose conversation is recorded on a cockpit voice recorder tape sought under the FOIA, the FAA will consult the crew as to what should be withheld. Any disclosures resulting from this process are no more likely to result in invasions of privacy than the transcripts of germane matters from cockpit voice recorder tapes made public by the NTSB in its accident investigation reports.

The FAA is also aware that, from time to time, discussions of company or union confidential matters may appear on the tapes. The carrier or union concerned will be consulted, as appropriate, regarding possible withholding of such matters under the authority of Exemption 4 of the FOIA (5 U.S.C. 552(b)(4)).

A number of commenters, including the NTSB, express concern that by allowing an aircraft to fly up to 8 hours without a cockpit voice recorder, valuable information would be lost should an accident occur. The FAA is also concerned about the possibility of an accident occuring during the period when the tapes are removed from an aircraft, and every effort will be made to remove the cockpit voice recorder at an airport where a replacement is available. It should be noted that the FAA does not seek possession of unmanageable numbers of tapes but only of a very small sample as dictated by the statistical design developed under the Human Factors Program. This is likely to result in a review of a very small percentage of all tapes on board aircraft. In the event that immediate replacement of the cockpit voice recorder is not possible under unusual circumstances, the FAA has determined that the public interest in allowing FAA access to these tapes greatly outweighs the loss of information which may occur in the remote possibility of an accident.

One commenter states that the proposals would fit a scheduled service where the airplane is in a maintenance base every 6 flight hours, but will not work for long-range overseas flights or where the aircraft is in charter service. Based on this comment, the FAA has reconsidered its position on allowing an aircraft operating under Part 121 of the FAR to fly only 8 hours with its tapes removed. To enable long range aircraft to fly the longest leg possible this 8-hour flight limitation is changed to 14 hours. Such a revision will enable long aircraft flights, such as westbound flights from New York to Tokyo, to reach a main base where tapes or recorders can be replaced. Again, the agency will make every reasonable attempt to minimize the time during which aircraft are flown without tapes. Data collection procedures will be based on the assumption that the primary removal location will be staffed with enough experienced personnel and spare parts so that recorders can be removed and replaced without interferring with scheduled airlines departures.

Several commenters believe that compliance with the proposals should be made strictly voluntary. One commenter suggests that a pilot who feels that the information compiled from a flight would be valuable for FAA study could call for removal of the tapes, with his or her company's approval, for dispatch to the FAA. The FAA would welcome any tapes removed on a voluntary basis for a human factors study but believes that tapes selected on an on demand basis will more accurately represent a crew's normal performance of its workload. Tapes voluntarily submitted to the FAA would tend to show flight crew behavior at its best since the crew involved knows that its conduct, as reflected in the tape, will be subject to scrutiny.

At least one commenter is concerned about the cost which must be borne by the operator for implementation of the rules. As stated in Notice 80–14A (45 Fr 72017) the FAA will assume the direct costs reasonably related to this program. The FAA will provide funds to reimburse air carriers for the direct costs involved in this data collection effort. Discussion of these costs will be included in an impending agency order and advisory circular.

Several commenters state that satisfactory data can only be obtained by direct observation of the crew at work, since many things are done in the cockpit without a word being spoken. The FAA does not agree. As discussed in Notice 80–14, when FAA inspectors are on board a flight, cockpit work follows standard procedures and workload patterns appear to duplicate those found during certification test flights. Flight crews have charged that workload distributions in actual line operations are higher than those experienced during FAA enroute inspections and line checks. Such charges can not be adequately evaluated without the review of flight data recorder and cockpit voice recorder tapes to confirm the existence and determine the causes of the stated problems. Other commenters suggest that a human factors study should be conducted instead in aircraft simulators operating under line oriented flying procedures since emergency procedures can be added to normal routine in a simulator. Simulators will be used in the study of human factors where appropriate. In addition, the collection of real world data will provide additional credibility and a validation baseline for human factors analysis. Therefore, there is a need to obtain data from aircraft in flight.

Several commenters suggest that there is an already existing body of human factors data which the FAA could analyze to satisfy the requirements of these proposals. They suggest that the FAA look to such things as studies undertaken by aircraft manufacturers and other civil aviation authorities, as well as data obtained by the United Kingdom in its studies. They suggest that parties such as active and retired airline personnel be utilized to establish the needed data base. The FAA agrees that there are many current sources of human factors information; however, this information is not of such magnitude that analysis of additional information should not be sought in the interest of aircraft accident prevention. In fact, the data base of the human factors information presently available has been used to determine that further data is needed. For example, NTSB study of cockpit voice recorder tapes following the Eastern Airlines crash at Charlotte, North Carolina, revealed that the probable cause of the accident was the flightcrew's lack of altitude awareness at critical points during the approach due to poor cockpit discipline. Through a study of the cockpit voice recorder tapes the NTSB found that company required callouts were not made. The NTSB stated that the extraneous conversation conducted by the flightcrew during the descent, as reflected in the tapes, was symptomatic of a lax atmosphere in the cockpit which continued throughout the approach. Similarly, NTSB study of cockpit voice

recorder tapes following the National Airlines crash in Pensacola, Florida, revealed that poor cockpit management and judgment contributed greatly to that accident. The tapes in that crash revealed that the probable cause of the accident was in part the flightcrew's unprofessionally conducted nonprecision instrument approach in that the captain and the crew failed to monitor the descent rate and altitude and the first officer failed to provide the captain with required altitude and approach performance callouts. Further study of inflight data is vital in understanding the nature of such crew errors and in identifying underlying human factors problems. With regard to those comments concerning data compiled by the United Kingdom, such data and other pertinent data surces will also be analyzed to identify human factor safety issues. These other sources may well include information derived from parties such as airline personnel.

At least one commenter points out that since most recorders contain only the last 30 minutes of the flight on tape, it is very doubtful if any departure or any enroute information would be obtainable for study. The FAA does not agree. If the Administrator determines that the cockpit voice recorder recordings of a specific segment of enroute flight are desired for human factors study, the aircraft pilot in command will be notified to disconnect the power source to the recorder. This notification to the pilot in command will include the time and place at which the power source is to be disconnected. For example, the disconnect may be requested immediately by the FAA Principal Operations Inspector or by the Administrator through the certificate holder, or it may be at some specified point in the future such as immediately after completion of the landing roll. At this time, the FAA is not proposing to extend the 30 minute duration of the tape.

Several commenters suggest that the FAA as an enforcement agency cannot be impartial in its study of cockpit voice recorder and flight data recorder tapes. They state that implementation of the proposed program could best be accomplished by an impartial nongovernment agency. The FAA does not agree that its function as a enforcement agency will in any way influence its study of the inflight data. A principal responsibility of the agency is development of effective regulations. Human factors is an important element in aviation safety, and is a regulatory area deserving of application of an improved state-of-the-art. The purpose of the proposed rules is to lay the groundwork for improved understanding of human factors in line operations of commuters and air carriers, so that regulations may be improved to reflect the latest state-of-the-art.

The Air Line Pilots Association (ALPA), in its comment, objects to use of NTSB reports on the Eastern Airlines DC–9 crash at Charlotte, North Carolina, and the National Airlines crash at Pensacola, Florida in support of the proposals, since it claims that it has petitioned the NTSB to reconsider the probable cause of those crashes. Diligent search of NTSB records and contact with NTSB personnel has failed to disclose any petition pending by ALPA for reconsideration of the probable cause of the Eastern Airlines DC–9 crash at Charlotte, North Carolina. In regard to the National Airline's crash at Pensacola, Florida, the FAA does not agree that reference to the NTSB report in that case was in any way inappropriate. Whether ALPA will be able to overturn the NTSB's report is speculative. However, the report referred to in support of Notice 80–14 is currently a proper and valid compilation of the NTSB's findings. Furthermore, the Pensacola crash, whether reconsidered by the NTSB or not, is at the very least an example of the type of unsafe activity which might take place in the cockpit. Study of inflight data will assist in the implementation of regulations and programs designed to prevent the occurrence of such breakdowns in cockpit discipline.

Several commenters are concerned that implementation of the proposals may degrade safety by inhibiting normal cockpit communication. They state that FAA access to every utterance in the cockpit is likely to inhibit normal crewmember behavior and to also destroy the working relationship between pilots and controllers. Cockpit voice recorder equipment has been required since 1966. Given this long period of time in which flight deck crewmembers have worked aware that their cockpit conversations are being recorded, implementation of these proposals will not likely inhibit normal crewmember behavior or in any way affect the routine cockpit work environment. Certainly crewmembers should not be apprehensive about making normal cockpit communications with other crewmembers or controllers.

Several commenters gave their views regarding the logistics of tape exchanges. They commented, for example, on the reasonableness of a cockpit voice recorder or cockpit voice recorder magazine change in a 15- to 30-minute time-frame using qualified personnel. The significance of these comments is appreciated since the FAA does not intend to impose any unreasonable costs or delays on any operator or to allow unqualified persons to remove or replace recorders. The removal and replacement of recorders will be accomplished by air carrier personnel. For the majority of aircraft 30 minutes is a more than sufficient period of time for qualified personnel to change the entire cockpit voice recorder. To prevent possible disruption of airline schedules and the unnecessary delaying of passengers, the FAA intends to remove the cockpit voice recorder at a base where a replacement is available. If under unusual circumstances a replacement recorder is not available, the FAA has increased the number of hours which a long range airplane may fly without a cockpit voice recorder from 8 hours to 14 hours so that airline schedules need not be disrupted.

One commenter states that the proposals could not produce any substantial amount of meaningful data given that the recorders are not designed for rapid acquisition and processing of data for study purposes. The FAA does not envision any rapid processing or quick analysis of the tape information. No attempt will be made to play back the cockpit voice recorder in the field. The cockpit voice recorder will be removed, replaced by a serviceable unit if available, and then carried to a designated readout facility. Qualified personnel will play back the recording. These individuals will take the time needed to accurately and thoroughly review the data.

Several commenters state that the FAA has neither the manpower nor the capability to use flight data recorder and cockpit voice recorder data for the purposes set forth in the Notice. The FAA does not agree. The FAA does indeed have adequate resources to implement the proposals. The FAA Office of Aviation Safety will coordinate development of a system to collect, reduce and analyze collected data. Through interagency agreements with other government agencies and contracts with industry, an effective system for data processing will be established.

Several comments were made regarding the limited number of parameters on the oscillographic flight data recorder which preserves its data by engraving traces on metal foil and which presently account for over 80 percent of the flight data recorders in use. The FAA is aware of the limitations in the older type recorders as compared

to the new and improved expanded parameter Digital Flight Data Recorders (DFDR). However, the FAA still considers the recorded value of dynamic or continually changing parameters such as time, altitude, airspeed, heading, and vertical acceleration, very useful data for the purpose of these proposals, and some commenters concur in this point.

At least one commenter states that the data provided through these proposals will not prove useful in assessing cockpit crew workload since the desired human factors information must be gained in part with the help of performance parameters and measurement instrumentation, including TV cameras, oculometers and head position transducers. The FAA disagrees that flight data recorder and cockpit voice recorder data alone will not be useful in providing a human factors data base. While this commenter's proposal may have some merit, the FAA must not reject every good approach merely because it is not the best possible one. In addition, it may not be compatible with aircraft operations under Parts 121 or 135 of the Federal Aviation Regulations to install and operate the type of equipment suggested, as it would likely be distracting an disruptive to flight deck crewmembers.

One commenter stresses the technical limitations and poor intelligibility of the cockpit voice recorders. The commenter states that these limitations are well known to the FAA since a recent FAA cockpit voice recorder maintenance improvement program revealed widespread problems in cockpit voice recorder maintenance procedures. Discovery of such widespread problems in the recorders by the FAA cockpit voice recorder maintenance improvement program has resulted in numerous corrective actions that have assured better recording performance and recovery intelligibility. In addition, the FAA has recently established a regulatory program to further improve the audio quality and intelligibility of cockpit voice recorders. There are still some technical limitations with the recording equipment, especially in regard to the different environments it is subjected to in different types of aircraft. However, despite such limitations, an invaluable amount of accident investigation information has been obtained by the NTSB from such equipment. The four channel unit that records, for a period of 30 minutes, all radio communications to and from the aircraft, as well as interphone communications, sounds from the flight deck, and signals identifying navigation and approach aids, will provide essential human factors information concerning numerous safety matters.

The NTSB and several other commenters state that it would be difficult to use cockpit voice recorder data to measure crew workload other than the communication workload itself. The FAA does not agree. This inflight data must first be compile and analyzed before such a judgment can be made. Furthermore, the FAA plans to use this inflight data base in a variety of studies, only one of which involves crew workload.

Several commenters support the basic idea behind the proposals; i.e., the gathering of inflight data for the purpose of studying human factors elements involved in daily airline operations, but object that the Notice makes no provision for how its objectives are to be achieved. They ask such questions as what hard data is to be gathered, who is to do the analysis, what role will the computer play, etc. As stated earlier, details regarding such matters as collection and analysis of the inflight data will be determined by the aviation community as a whole, in large part through their participation in the Human Factors workshop series initiated last November. The FAA Human Factors Task Force has been assigned the responsibility of coordinating the formulation of a program to organize and analyze the human factors data obtained through the implementation of these proposals. This group, with the help of interagency agreements with other government agencies and contracts with private industry, is in the process of developing a comprehensive Human Factors Program plan including the study of flight data recorder and cockpit voice recorder data. Furthermore, the inflight data, in addition to furthering studies currently underway, will provide useful information for possible future studies affecting many areas of aviation safety.

These same commenters believe that implementation of the rules as proposed should be re-evaluated annually. The FAA continually re-evaluates and revises regulations and programs. In addition, the public is invited to petition for rulemaking when they believe changes are necessary.

One commenter states that the cockpit voice recorder tape cycle times should be extended beyond the present 30 minutes so as to cover the entire flight. Adequate information will be available with the equipment currently in use given that the Administrator can obtain cockpit voice recorder tapes of any specific segment of a flight simply by notifying the pilot in command to pull a circuit breaker or disconnect the power source to the recorder. As stated earlier, the FAA does not deem that a retrofit of all cockpit voice recorder equipment is necessary at this time to acquire a sufficient human factors data base.

Description of the Proposed Amendments

Sections 121.343, 121.359 and 135.159 of the Federal Aviation Regulations would be amended to require that cockpit voice recorder and flight data recorder information be made available to the Administrator at such time and place as the Administrator may designate for study of the human factors affecting aviation safety. Since the flight data recorder may have many hours remaining on it, the certificate holder would be allowed to continue to use the recorder until reaching a point where it could be replaced. However, if the Administrator determines that the recorded data will be erased or otherwise obliterated, or will be needed before the aircraft reaches a point where the recorder can be replaced, he may request the information immediately.

Since the cockpit voice recorder contains only a 30-minute tape, the Administrator would request in most cases that the power to the recorder be disconnected at a time specified to the pilot in command. In Notice 80-14 the FAA proposed to allow the aircraft to continue to operate for up to 8 hours flight time with the tapes removed. Due to public response the FAA has reconsidered this limitation and the proposed rules would now permit aircraft operating under Part 121 of the FAR to operate up to 14 hours with the tapes removed. However, the proposed rules would also provide that the aircraft may not depart an airport where the tapes can be replaced.

The FAA is concerned that operation of an aircraft without a cockpit voice recorder may result in the loss of valuable data should an accident occur, and therefore will attempt to remove the cockpit voice recorder at an airport where a replacement is available. The proposals further provide that no person may erase or otherwise obliterate the information requested by the Administrator.

As a result of public response to Notice 80-14, an additional subsection was added to each of the proposed rules which states that the information obtained from the cockpit voice recorder will not be used by the Administrator in any civil penalty or certificate action. Flight data recorder data are no different from any other record or report required by the regulations, and information from these recorders may continue to be reviewed and used in

investigations and enforcement proceedings. However, in cases where the Administrator directs removal of a flight data recorder record in conjunction with a cockpit voice recorder record for purposes of analysis in the study of human factors, data contained on the flight data recorder may not be used in any civil penalty or certificate action against any crewmember.

The Proposed Amendments

Accordingly, the Federal Aviation Administration proposes to amend Parts 121 and 135 of the Federal Aviation Regulations (14 CFR 121 and 135) as follows:

PART 121—CERTIFICATION AND OPERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT

1. By revising § 121.343 by inserting the words "and (e)" after the words "paragraph (d)" in the first and last sentence of paragraph (c); by redesignating paragraphs (d), (e), (f), and (g) as (e), (f), (g), and (h) respectively, and adding a new paragraph (d) to read as follows:

§ 121.343 Flight recorders.

* * * * *

(d) The recorded data prescribed in paragraph (a) of this section shall be made available to the Administrator at such time and place as the Administrator may designate.

* * * * *

2. By revising § 121.359 by adding new paragraphs (f), (g), (h), (i), (j), and (k) to read as follows:

§ 121.359 Cockpit voice recorders.

* * * * *

(f) The recorded data prescribed by this section shall be made available to the Administrator at such time and place as the Administrator may designate.

(g) Notwithstanding paragraph (a) of this section, an airplane which has had its cockpit voice recorder or cockpit voice recorder magazine removed under paragraph (f) or disabled in compliance with paragraph (h) of this section, in order for the Administrator to obtain the recorded data, may be operated without an operative cockpit voice recorder for 14 flight hours following removal or disabling provided the airplane does not depart an airport where a replacement cockpit voice recorder or cockpit voice recorder magazine is available.

(h) The pilot-in-command shall ensure that—

(1) Upon notification by the Administrator or the certificate holder, the power soure to the cockpit voice recorder is disconnected at the time and place designated, and

(2) The previously recorded information is not erased or otherwise obliterated.

(i) No person may erase or otherwise obliterate recorded data which the Administrator has requested.

(j) The Administrator will not use the information obtained from the cockpit voice recorder in any civil penalty or certificate action.

(k) If the Administrator orders the removal, for the purpose of analysis of the information in the study of human factors, of both the cockpit voice recorder or cockpit voice recorder magazine under § 121.343(d) and the flight data recorder under § 121.359(f), then the Administrator will not use the information obtained from the flight data recorder in any civil penalty or certificate action.

PART 135—AIR TAXI OPERATORS AND COMMERCIAL OPERATORS

3. By revising § 135.151 by adding new paragraphs (c), (d), (e), (f), and (g) to read as follows:

§ 135.151 Cockpit voice recorders.

* * * * *

(c) The recorded data prescribed by this section shall be made available to the Administrator at such time and place as the Administrator may designate.

(d) Notwithstanding paragraph (a) of this section, an airplane which has had its cockpit voice recorder or cockpit voice recorder magazine removed under paragraph (c) or disabled in compliance with (e) of this section, in order for the Administrator to obtain the recorded data, may be oprated without an operative cockpit voice recorder for 8 flight hours following removal or disabling provided the airplane does not depart an airport where a replacement cockpit voice recorder or cockpit voice recorder magazine is available.

(e) The pilot-in-command shall ensure that—

(1) Upon notification by the Administrator or the certificate holder, the power source to the cockpit voice recorder is disconnected at the time and place designated, and

(2) The previously recorded information is not erased or otherwise obliterated.

(f) No person may erase or otherwise obliterate recorded data which the Administrator has requested.

(g) The Administrator will not use the information obtained from the cockpit voice recorder in any civil penalty or certificate action.

(Secs. 313(a) and 601 through 605 of the Federal Aviation Act of 1958, as amended (49 U.S.C. §§ 1354(a), 1421, and 1424); Sec. 6(c), Department of Transportation Act (49 U.S.C. § 1655(c)); and 14 CFR Part 11.45)

Note.—The Federal Aviation Administration has determined that this document involves proposed regulations which are not significant under Executive Order 12044, as implemented by Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A copy of the draft regulatory evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by contacting the person identified above under the caption "FOR FURTHER INFORMATION CONTACT."

Issued in Washington, D.C., on January 14, 1981.

Langhorne Bond,

Administrator.

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